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PRODUCTION OF LARGE HYDROGENERATORS,
MOBILE POWER PLANTS IN THE USSR

ELEKTROSILA PLANT BOOSTS OUTPUT -- Moscow, Pravda, 5 Jun 53

In the first 2 years of the Fifth Five-Year Plan, the Leningrad Elektrosila Plant imeni Kirov increased its over-all volume of production 40 percent. In this same period, the plant's labor force increased only 15 percent. The rate of output of generators for steam and water turbines was 2.5 times greater at the end of this period than it was at the beginning.

Since 1951, the plant has been carrying on intensive planning and experimental work on hydrogenerators for the Kuybyshev and Stalingrad hydroelectric stations. Planning and design of the special large machines are proceeding successfully, and the plant has guaranteed delivery of the first generator in 1953 as called for by the plan. Working sketches of the hydrogenerator are now being completed, and materials for the production of the machine are being assembled.

One of the big problems connected with the planning of the hydrogenerator is to design a thrust bearing that will support a vertical load of 3,500 tons. Several variant designs have been worked out, complex computations made, and a number of specialists and organizations called in to help. The laboratory of the Institute of Machine Studies, Academy of Sciences USSR, helped solve some of the problems. The plant has built an experimental model of the thrust bearing and installed it in an electric power station for detailed testing under operating conditions.

In recent years, the Elektrosila Plant has taken measures to make welding automatic and to mechanize labor-consuming insulating and winding operations. These measures made it possible to double output during a period of several years without adding space in the subassembly shops.

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In building large hydrogenerator assemblies, mechanical and electromagnetic vibration becomes an acute problem. Until recently, the plant did not devote sufficient attention to the study of vibration and the elimination of its causes. This neglect led to several complications in the final stages of assembly of huge turbogenerators of new design.

Not even the slightest deviations from established technological norms are permissible in building these high-powered assemblies, since the smallest deviations could bring serious consequences.

Improved technological processes should be developed to parallel improved lesigns for new machines, and planning should be preceded by exhaustive scientific research work. However, the Elektrosila Plant does not have the facilities for thorough research on the problems of building modern large electric machines. The new plant laboratory should be put in operation as quickly as possible.

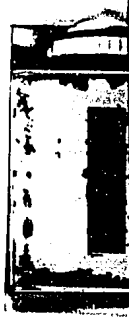
Plant workers are making the computation of turbogenerator design elements more accurate, are developing new designs for increasing the power of units, and are working on the application of new types of heat-resistant insulating materials. However, in these fields, a great deal depends on enterprises that supply the Elektrosila Plant with materials and parts. Output of machines is frequently held up by defective shrink ring forgings, supplied for the most part by the Sverdlovsk Uralmash Plant.

The quality of hot rolled electrotechnical steel being used at the plant does not satisfy the requirements of electric machine builders there. The requirements for this type of steel laid down in the standard have already become obsolete. This standard must be revised, since it plainly fails to meet present-day requirements.

An important factor in electric machine building progress is improvement in the production of insulating materials, including special lacquers. However, the output of materials with high heat resistance is lagging behind the needs of production. The Ministry of Chemical Industry USSR, insulating materials plants, and the All-Union Electrical Engineering Institute should speed action on the development of high-quality, heat-resistant insulating materials, and should work in closer cooperation with one another. Enterprises of the Ministry of Wood and Paper Industry should rush the output of high-strength asbestos paper.

Large-series production of turbo- and hydrogenerators calls for interchangeability of parts and units. D'yakonov, chief technologist of the Elektrosila Plant, aided by leading designers Timofeyev, Zorin, and Musiyenko, have developed new technological processes for the large-series production of hydrogenerators for the Kuybyshev and Stalingrad hydroelectric stations. This group has drawn up plans for making certain standard units of special fixtures, utilizing automatic and semiautomatic welding, and for drilling parts for large rotors and support brackets in jigs.

However, there is still much to be done. Precision layout and precision machining of parts for large hydrogenerators is being held up because tool plants are not supplying the Elektrosila Plant with the necessary large-size measuring instruments. Lacking these instruments, the plant must continue to employ selective assembly of units. Precision forging of a number of rotor parts is being held up because tool and machine tool building enterprises are not supplying special presses.



Forgings, castings, and rolled stock are still received from distant plants because the Ministry of Electric Power Stations and Electrical Industry does not facilitate their delivery from local cooperating plants.

Under present conditions, the problem of introducing the latest technological processes cannot be solved within the framework of a single enterprise. The success of new processes and techniques depends on the level of technology in plants that supply parts and materials to the electric power machine building industry. The recent amalgamation of the Ministry of Electric Power Stations with the Ministry of Electrical Industry provides ideal conditions for further progress in electric power machine building. -- N. Shevchenko, director, Leningrad Elektrosila Plant imeni Kirov.

Petrozavodsk, Leninskoye Znamya, 6 May 53

The Leningrad Elektrosila Plant Imeni Kirov is building a stator for a turbogenerator with a capacity of 100,000 kilowatts.

SHIPS GENERATORS -- Moscow, Komsomol'skaya Pravda, 10 May 53

Recently, the Sverdlovsk Uralelektroapparat Plant shipped a 300-ton hydrogenerator to the Kamskaya GES project.

Moscow, Izvestiya, 14 May 53

The Sverdlovsk Uralelektroapparat Plant, which builds powerful vertical hydrogenerators, shipped about 70 carloads of generator parts and units in the first quarter 1953.

BUILDS MOBILE GENERATOR UNITS -- Yerevan, Kommunist, 24 Apr 53

In 1952, the Yerevan Electrical Engineering Plant organized the series output of 4 and 30 kilowatt-ampere mobile generator units. The plant makes the electric generators, as well as housings, control panels, and reduction gears for the generators. Diesel engines for the mobile units are received from Stalingrad and Ul'yanovsk.

In 1953, the plant shipped several generator units to the Stalingradskaya GES project. In the Armenian SSR, generator units made by the plant are being used in the construction of a new railroad station and at one of the institutes of the Academy of Sciences Armenian SSR.

The plant will produce thousands of mobile generator units during the Fifth Five-Year Plan.

The plant was the first enterprise to install type SGT synchronous generators, which were designed by plant personnel, on mobile generator units.

The production of mobile generator units was organized by S. Tumanyan, chief of production; A. Isagulyan, chief designer and Stalin Prize winner; and Ye. Chakhkalyan, chief technologist.

50X1-HUM

Yerevan, Kommunist, 31 May 53

The Yerevan Electrical Engineering Plant has completed its plan for May 1953 ahead of schedule and assembled a number of ZhES-30 mobile generator units above the plan. The generator units are shipped to the Crimea, Central Asia, and Belorussia.

BUILDS SMALL GENERATORS -- Moscow, Vechernyaya Moskva, 3 Jun 53

The Kiev Kinap Plant has organized the mass production of the "Kiev" 750-watt mobile generator. The unit consists of a generator and a gasoline engine. It weighs less than 50 kilograms and is no larger than a "Leningrad" television set.

Eleven of these units have already been shipped to Kiyevskaya Oblast for use with mobile motion picture projectors.

The plant will turn out 2,500 of these miniature generators by the end of 1953.

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